



# PEC UPDATE

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## ISSUE HIGHLIGHTS

TSF Revision Three -  
Acute Respiratory Tract  
Infections

- 1 -

TSF Acute Respiratory  
Tract Infection Revisions

- 2 -

Treatment Model and  
Guidelines

- A1 -

Preferred Drug List

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- A11 -

TSF Quick Reference  
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- A12 -

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*Happy Holidays from  
the PEC!*



## Tri-Service Formulary - Revision Three (Acute Respiratory Tract Infections)

The Assistant Secretary of Defense (Health Affairs) approved the initial Tri-Service Formulary (TSF) in November 1993. Additionally, revisions to the TSF were approved for the treatments of hypertension, acid-peptic diseases, and major depression (see Updates 94-08, 94-09, and 95-02). This Update, 95-03, includes revision three of the TSF, approved in November 1994, and the cost-effectiveness model, treatment guidelines, preferred drug list, and drug use evaluation criteria for the treatment of acute respiratory tract infections (community acquired pneumonia, bronchitis, sinusitis, otitis media).

### *Background*

Acute respiratory tract infections comprise a significant percentage of the visits to a primary care provider. The cost of the illness includes not only the expenditure of medical resources, but also the lost productivity of the patient or the parent. Acute respiratory infections tend to be episodic, self-limiting, and are generally treated empirically.

### *Pharmaco-economic Model*

The low acquisition cost of the medications used for symptomatic relief and the first-line antibiotics is greatly outweighed by the cost of a provider visit. From an economic viewpoint, the least costly way to manage these illnesses is through self-care, when clinically appropriate. In many situations, antibiotic therapy has not been shown to be of significant benefit for empiric use with these conditions. When antibiotics are clinically indicated, the first-tier antibiotics should be used first. Second-tier antibiotics should be used only in the event of treatment failure or allergies to all relevant first-tier agents. Third-tier antibiotics should rarely be necessary in this patient population.

### *Tri-Service Formulary Selections*

The Tri-Service Formulary selections for this group of disease states consist of acetaminophen and ibuprofen to control inflammation and pain and the first-tier antibiotics. Decongestants provide symptomatic relief; no additional decongestants were selected for inclusion on the TSF since their effectiveness is similar.

Revisions to the TSF, treatment guidelines, PDLs, and DUE criteria resulting from the review of acute respiratory tract infections are included in this Update. These documents are available to MTFs on diskette from the PEC. If you have any questions or comments pertaining to the TSF or any supporting materials, or you wish to request information on diskette, please contact the PEC at DSN 471-4311/4603 or (210) 221-4311/4603.

### Tri-Service Formulary Revisions Resulting from Review of Acute Respiratory Tract Infections

<u>AHFS* Category</u>		<u>Action</u>
<b>4:00</b>	<b><i>Antihistamines</i></b>	
	Brompheniramine/Phenylpropanolamine Elixir and Extended Release Tablets (eg. Dimetapp®)	Retain
	Triprolidine and Pseudoephedrine Tablets (eg. Actifed®)	Retain
<b>8:12.12</b>	<b><i>Macrolides</i></b>	
	Erythromycin Tablets or Capsules	Retain
	Erythromycin Suspension	Add
	Erythromycin/Sulfisoxazole Suspension (eg. Pediazole®)	Add
<b>8:12.16</b>	<b><i>Penicillins</i></b>	
	Amoxicillin Capsules	Retain
	Amoxicillin Suspension	Add
	Penicillin V 250 mg Tablets	Retain
	Penicillin V Suspension	Add
<b>8:12.24</b>	<b><i>Tetracyclines</i></b>	
	Doxycycline 100 mg Capsules or Tablets	Retain
<b>8:40</b>	<b><i>Miscellaneous Anti-Infectives</i></b>	
	Trimethoprim/Sulfamethoxazole Suspension and Tablets (eg. Bactrim™, Septra®)	Retain
<b>12:12</b>	<b><i>Sympathomimetic (Adrenergic) Agents</i></b>	
	Pseudoephedrine Hydrochloride 30 mg Tablets	Retain
<b>28:08.04</b>	<b><i>Nonsteroidal Anti-Inflammatory Agents</i></b>	
	Ibuprofen 400 mg Tablets	Retain
	Ibuprofen Suspension	Add
<b>28:08.92</b>	<b><i>Miscellaneous Analgesics and Antipyretics</i></b>	
	Acetaminophen 325 mg Tablets	Retain
	Acetaminophen Drops	Add
	Acetaminophen Elixir	Add

\*AHFS - American Hospital Formulary Service

## MANAGEMENT OF OUTPATIENT ACUTE RESPIRATORY TRACT INFECTIONS

### INTRODUCTION

Acute respiratory infections account for a significant percentage of the visits to a primary care provider. These infections are generally the initial clinical illnesses to manifest after birth, and commonly are the terminal events in the aged population. Between these two extremes of life, the average person experiences multiple episodes of upper respiratory illness. The cost to society for acute respiratory infections includes not only the expenditure of medical resources, but also the lost productivity of the patient or the parent of the patient.<sup>1</sup> Disease state management likewise includes more than the selection of the appropriate pharmaceutical intervention.

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### ASSUMPTIONS

The following pharmacoeconomic model and treatment guideline are pertinent to the **outpatient care of mild to moderate, acute respiratory infections in a primary care setting**. The respiratory infections addressed by this guideline include: community acquired pneumonia, bronchitis, sinusitis, and otitis media. The presence of co-morbid disease or an immunocompromised host requires considerations beyond the scope of these recommendations.

For the sake of cost comparisons, a course of therapy is assumed to be 10 days unless otherwise specified. All pediatric medication costs were calculated using the liquid formulation. The antibiotic suspension cost was calculated to the closest package size available (i.e., if the calculated amount to be dispensed was 130 ml, the cost of a 150 ml bottle was used). The acquisition cost of all medications was based on the best available price to the Department of Defense.

Issues relevant to the management and therapy of these respiratory infections are first discussed in general terms and specific rankings of medication are identified, followed by specific disease state discussions.

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### DISCUSSION

Acute respiratory infections encompass a variety of clinical diagnoses. The nature of these infections requires a somewhat different pharmacoeconomic approach than that used to evaluate a chronic medical problem. Three basic considerations are fundamental to developing a pharmacoeconomic model to guide therapeutic decisions for these infections. First, the episodic and transient nature of these illnesses differentiates the analysis from longer term disease state models such as hypertension. Secondly, the self-limiting nature of these conditions introduces an interesting stumbling block in measuring efficacies. Thirdly, these disease states are generally treated empirically, relying on statistical trends for likely pathogens and bacterial susceptibility. Understanding these three considerations helps point the way to a reasonable approach to management.

### *Episodic Transient Illness Effect*

The categories of costs are similar for both short and long-term problems: provider visits, laboratory and radiographic studies, medications, and hospitalizations. However, due to the short course of therapy and the benign course of the underlying condition, the model for upper respiratory illnesses is characteristically more heavily weighted toward the cost of visits rather than the other factors mentioned above. The low acquisition cost of the medications used for symptomatic relief and the first-line antibiotics ameliorates the cost impact of medications. However, some newer antibiotics such as the synthetic macrolides, while efficacious and indicated in specific situations, markedly increase the cost of treating the disease process.

### *Self-Limiting Illness Effect*

The phenomenon of converging clinical effectiveness (delineated as the Pollyanna effect by Marchant et al<sup>2</sup> with regard to otitis media) occurs in clinical trials in a number of disease states including otitis media, bronchitis, sinusitis, and pneumonia. The common factors are a disease which:

1. Resolves without therapy in a significant percentage of patients, and
2. Persists, even if treated with appropriate antibiotics, in a significant percentage of patients.

The end result is a convergence of clinical outcomes even for medications with widely dispersed bacteriological efficacies. Drugs with **high bacteriological efficacies** tend to have a **lower clinical effectiveness** because a number of cases are caused or exacerbated by other factors, such as a viral illness. Conversely, drugs with **low (or absent) bacteriological efficacies** have **higher clinical effectiveness** because of the self-limiting nature of the disease process which results in resolution of the complaint in spite of ineffective therapy. This explains why newer antibiotics often are promoted with data showing improved in vitro efficacy. The more germane question is the effectiveness of the therapy in a clinical situation. A review of the literature reveals a large number of studies with different medications showing nearly **uniform (and excellent) clinical effectiveness**. The majority of controlled clinical trials show equivalent efficacies of the antibiotics used to treat upper respiratory illnesses.

### *Empiric Therapy*

The difficulty associated with identification of a specific etiology often justifies empiric therapy of these outpatient conditions. The risk of treatment failure must be evaluated in the choice of therapy. Is the added cost of the "new and improved" antibiotic balanced by a corresponding decrease in "decision to treat" expenditure of medical resources? The eventual resolution of the symptoms leaves unanswered the question of the role played by the antibiotic choice in the individual patient.

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## PHARMACOECONOMIC MODEL

Several models were constructed. Initially, a generic model assessing the costs associated with the decision to treat was evaluated. Factors evaluated in the model included: provider visits, treatment of side effects, compliance probability (based on frequency of drug dosing and taste), efficacy, initial and subsequent drug acquisition costs, and follow-up care. Several aspects were evident:

- ▶ Ultimate decision to treat costs increased incrementally as drug acquisition costs increased. The differences in clinical efficacy based on randomized controlled clinical trials were insufficient to overcome basic trends.
- ▶ The costs associated with the treatment of severe side effects, such as Stevens-Johnson syndrome or serum sickness-like reactions, when adjusted for frequency of occurrence, did not affect the ranking of decision to treat costs.
- ▶ Sensitivity analysis of the above data regarding compliance, drug costs, costs of provider visits, and follow-up costs changed the ranking of antibiotics only within the general tier (see antibiotic discussion below).

To simplify the analysis and eliminate non-significant factors, a cost-per-episode model was adopted using drug acquisition cost only. The relevant antibiotics could be grouped into three tiers based on the acquisition cost for a course of therapy.

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### RECOMMENDATIONS

In general, the cost-savings associated with appropriate use of pharmaceuticals are proportional to the percentage cost associated with the medication. Since the predominant cost associated with a acute respiratory infection is the cost of the provider visit, from an overall cost management perspective, once the patient is seen, a large percentage of the episode cost is a "sunk cost"; it has already been expended and is no longer a manageable expense.

If effective pharmacoeconomic management is to be accomplished, it must start before the patient visit. Because these illnesses are characteristically self-limiting, minimizing unnecessary visits is a logical first step. Education of patient and parent is the best applicable principle. Triage by inconvenience, the ad hoc method used in a overloaded clinic, will only increase costs by fostering overuse of the emergency department or the neglect of a treatable illness in its early stages. Use of the following measures has the additional bonus of potentially improving the quality of care and reducing the indirect costs of the illness to the patient (time away from usual activities due to the visit to the provider).

General measures to encourage appropriate utilization include:

**Telephone consultation access<sup>3</sup>:** Phone consultation with a provider will ease the burden in the clinic schedule and provide better care and triage.

**Access to care<sup>4</sup>:** Appointments in a military primary care clinic are the least expensive alternative after self-care and telephone consultations.

**Self-help books<sup>3-5</sup>:** Health awareness activities are useful. If one visit is deterred, the cost of the book is recovered.

**Emphasize primary care with empaneled, stable units<sup>5</sup>:** Ninety percent of medical problems can be handled by primary care, allowing appropriate use of subspecialty appointment slots.

**Appropriate preventive care<sup>4,6</sup>:** Immunizations are well documented as one of the most cost-effective use of medical resources.

**Encourage "time of encounter" education<sup>4</sup>:** Adequate time to ask and answer questions avoids additional visits and facilitates compliance with the prescribed treatment. Informed patients and parents are resources which take time to develop.

**Encourage OTC drug self treatment:** The strategic effect of "over-the-counter (OTC) drug self-care programs" at military medical treatment facilities (MTF) has not been well defined at this time. However, a large percentage of acute respiratory infections can be adequately managed at home with symptomatic therapy.

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## ANALGESICS/ANTIPYRETICS

Symptomatic therapy is generally applicable to all upper respiratory infections characterized by the variable presentation of fever, aches and pain, and congestion. While symptomatic therapy does not speed recovery, the decrease in morbidity associated with these medications may be appropriate. The acquisition cost of OTC antipyretics is dwarfed by the typical cost associated with a provider visit.

Intervention	Pediatric Cost	Adult Cost
Acetaminophen	\$0.56 for 120 mL of elixir	\$0.30 for 50 325 mg tablets
Provider Visit	\$40.00*	\$40.00*

\*1993 Physician's Current Procedural Terminology and Medicare Resource-Based Relative Value Scale

By avoiding a single provider visit, an MTF would be able to provide OTC analgesic/antipyretic therapy to as many as 70 pediatric or 130 adult patients. A patient visit simply to obtain these medications is a significant waste of resources.

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## ANTIHISTAMINES/ ANTITUSSIVES/ DECONGESTANTS/ EXPECTORANTS

The use of decongestants, antihistamines, antitussives, and expectorants for symptomatic relief of acute respiratory illnesses is controversial. Little evidence is available demonstrating improved short-term or long-term outcomes with these agents; however, in spite of the lack of documented benefit, these agents are widely used and scant evidence is available on deleterious effects. Cough

suppression should be avoided except in exceptional cases due to the decreased clearance of respiratory tract secretions.

**Antihistamines/Antitussives/Decongestants/Expectorants**

Medication*	Cost/ Episode/ Pediatrics	Cost/ Episode/ Adult
Benzonatate (Tessalon Perles®, others)	N/A	\$5.76/30 perles
Brompheniramine/Phenylpropanolamine (Dimetapp®, others)	\$0.72/120 mL	\$0.90/20 tablets
Dexbrompheniramine/Pseudoephedrine, sustained release (Drixoral®, others)	N/A	\$0.80/20 tablets
Guaifenesin, sustained release (Humibid® LA, others)	N/A	\$1.00/20 tablets
Guaifenesin Syrup (Robitussin®, others)	\$0.49/120 mL	\$0.98/240 mL
Guaifenesin/Phenylpropanolamine/Phenylephrine (Entex®, others)	\$1.38/120 mL	\$0.84/30 capsules
Guaifenesin/Phenylpropanolamine, sustained release (Entex® LA, others)	N/A	\$0.38/20 tablets
Pseudoephedrine (Sudafed®, others)	\$0.57/120 mL	\$0.32/24 tablets
Pseudoephedrine, extended release (Sudafed® 12 Hour)	N/A	\$4.20/20 capsules
Terfenadine/Pseudoephedrine (Seldane-D®)	N/A	\$9.54/20 tablets
Triprolidine/Pseudoephedrine (Actifed®, others)	\$0.67/120 mL	\$0.33/30 tablets

\* Brand names are used for example only. Medications were selected by frequency of inclusion on MTF formularies; not an exclusive or preferred list.

N/A = Not applicable

## ANTIBIOTICS

The decision to treat with antibiotics is based on clinical judgement, largely independent of economic considerations. In many situations antibiotics have not been shown to be of significant benefit for empiric use with these conditions. The selection of the appropriate medication can have significant cost repercussions. Therapeutic options can be divided by acquisition cost into three tiers as listed in the tables below.

## Management of Outpatient Acute Respiratory Tract Infections

### First Tier Antibiotics

Antibiotic	Pediatrics*		Adult	
	Dosage & Frequency	Cost per Course†	Dosage & Frequency	Cost per Course†
Amoxicillin	40 mg/kg/day	\$1.39	500 mg TID	\$2.10
Doxycycline	N/A	N/A	100 mg BID	\$1.20
Erythromycin‡	50 mg/kg/day	\$2.91	500 mg QID	\$2.40
Erythromycin/Sulfisoxazole (Pediazole®, others)	50 mg/kg/day of erythromycin	\$6.08	N/A	N/A
Penicillin VK	50 mg/kg/day	\$1.16	500 mg QID	\$1.60
Trimethoprim/Sulfamethoxazole TMP/SMZ (Bactrim™, Septra®, others)	8 mg/kg/day of TMP	\$1.50	1 DS tab BID	\$1.00

\* based on a 15 kg child, suspension used for cost calculation to the closest package size

† 10 day course of therapy

‡ as ethyl succinate

N/A = not applicable

### Pediatric Second Tier Antibiotics

Antibiotic	Dosage and Frequency*	Cost per Course†
Amoxicillin/Clavulanate (Augmentin®)	40 mg/kg/day (of amoxicillin)	\$25.38
Cefaclor (Ceclor®)	40 mg/kg/day	\$18.55
Cefadroxil (Duricef®, others)‡	30 mg/kg/day	\$11.73
Cefixime (Suprax®)	8 mg/kg/day	\$24.27
Cefpodoxime (Vantin®)	10 mg/kg/day	\$31.67
Cefprozil (Cefzil®)	30 mg/kg/day	\$27.04
Clarithromycin (Biaxin®)	15 mg/kg/day	\$14.29
Loracarbef (Lorabid®)	30 mg/kg/day	\$20.85

\* based on a 15 kg child, suspension used for cost calculation to the closest package size

† 10 day course of therapy

‡ for pharyngitis, tonsillitis only



### Adult Second Tier Antibiotics

Antibiotic	Dosage and Frequency	Cost per Course*
Amoxicillin/Clavulanate (Augmentin®)	500 mg TID (of amoxicillin)	\$38.70
Azithromycin (Zithromax®)	1.5 grams†	\$21.58
Cefaclor (Ceclor®)	250 mg TID	\$25.80
Cefixime (Suprax®)	400 mg QD	\$26.00
Cefpodoxime (Vantin®)	200 mg BID	\$35.40
Cefuroxime axetil (Ceftin®)	250 mg BID	\$31.80
Ciprofloxacin (Cipro®)	500 mg BID	\$33.00
Clarithromycin (Biacin®)	250 mg BID	\$30.00
Ofloxacin (Floxin®)	400 mg BID	\$29.00

\* 10 day course of therapy, except for azithromycin

† Azithromycin 500 mg on day one, 250 mg QD on days 2-5

### Adult Third Tier Antibiotics

Antibiotic	Dosage and Frequency	Cost per Course*
Cefadroxil (Duricef®, others)	1 gram BID	\$69.00
Cefprozil (Cefzil®)	500 mg BID	\$61.20
Cefuroxime axetil (Ceftin®)	500 mg BID	\$61.00
Loracarbef (Lorabid®)	400 mg BID	\$60.80

\* 10 day course of therapy

While bacteriological efficacies differ among these drugs, differences in clinical effectiveness are significantly blunted by the factors mentioned previously. The cost contribution associated with the first tier antibiotics makes a minimal impact on the cost of therapy for the illness episode. This leads to conclusion that, **from a pharmacoeconomic viewpoint**, it makes little difference if these medications are used once the cost of the visit has been incurred. This is not the case for the second and third tier medications, providing a convenient strategy for their use. **Specifically, second line antibiotics should only be used in the event of treatment failure or allergies to all relevant first tier agents. Likewise, third tier antibiotics should only rarely be necessary in this patient population.**

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## SPECIFIC DISEASE STATES

### Otitis Media:

Otitis media is most commonly seen in infancy or early childhood, and may be the most common illness in children. The cost of treatment has been estimated at over \$3.5 billion a year.<sup>7</sup> The microbiology has been well characterized by middle ear aspirates. The predominant organism is *Streptococcus pneumoniae* (~33%) followed by *Haemophilus influenzae* (~21%), *Moraxella catarrhalis* (~15%), and *Streptococcus pyogenes* (~5%).<sup>8</sup> Most episodes of otitis media will resolve without antibiotic therapy, and in Europe in certain circumstances are often treated symptomatically.<sup>9</sup> The recent guidelines published by the Agency for Health Care Policy and Research (AHCPR) reinforce this tenancy.<sup>10</sup> However, the potential consequences of persistent middle ear disease, such as reduced hearing and subsequent learning delays, the possibility of additional morbidity from mastoiditis, bacteremia, or meningitis, in addition to parental expectations, make antibiotics the standard of care in the United States.<sup>11,12</sup>

The role of bacterial resistance to antibiotics is unclear.<sup>13,14</sup> While in vitro resistance is increasingly documented, unresponsive middle ear disease also may indicate a viral origin.<sup>15</sup> Recurrences usually indicate a new, unrelated infection rather than a recrudescence of the same organism.<sup>16</sup> Amoxicillin is still recommended as the treatment of choice for otitis media in children.<sup>17</sup> Other reasonable first tier choices would be TMP/SMZ or erythromycin/sulfisoxazole (Pediazole®).

Otitis media is much less common in adult patients. A careful evaluation for related conditions is appropriate prior to initiating antibiotic therapy.

### Acute Sinusitis:

Although greatly over-diagnosed by patients and physicians, acute purulent sinusitis can usually be established on clinical grounds. Radiographic confirmation is only required when the patient fails to respond to decongestants and antibiotics.<sup>18</sup> Acute sinusitis is common in both the pediatric and adult population and is often superimposed on acute or chronic rhinitis. The pattern of pathogens involved resembles those implicated in otitis media: *S. pneumoniae* (25-30%), *M. catarrhalis* (15-20%), *H. influenzae* (15-20%), or sterile (20-35%).<sup>19</sup> Decongestants are of paramount importance, but antihistamines are discouraged due to their anticholinergic side effects and lack of efficacy in treating sinusitis. Most acute sinusitis can be treated without antibiotics; however, if symptoms are severe or persistent, the therapeutic choices are the same as those recommended for otitis media: amoxicillin, erythromycin/sulfisoxazole, or TMP/SMZ.

### Community acquired pneumonia:

Even when extensive diagnostic testing is performed, the pathogen responsible for community-acquired pneumonia is not identified in up to 50% of patients. Only 19% of pediatric pneumonias are of bacterial origin. Again, *S. pneumoniae* accounts for 30-60% of infections and *H. influenzae* accounts for approximately 10% of infections.<sup>20</sup> In an immunocompetent patient with mild to moderate disease empiric therapy is appropriate. The American Thoracic Society has published the following recommendations<sup>21</sup>:

- Adult, < 60 years, no co-morbid conditions: Erythromycin or other macrolide, with a tetracycline as an alternative.
- Adult, > 60 and/or co-morbid conditions: TMP/SMZ or a second generation cephalosporin (e.g., cefaclor, cefuroxime, cefprozil, cefpodoxime, loracarbef).

Clinical symptomatology is felt to be of limited value in differentiating typical from atypical disease. Clinical testing is more useful in assessing the course of the disease than in identifying the specific etiology.

### **Bronchitis:**

Generally, acute bronchitis should not be treated with antibiotics. Most cases are viral in origin, and therapy consists of supportive and symptomatic care. Antitussive medications are occasionally useful, but emphasis on hydration, observation, and avoidance of irritants results in resolution of symptoms as well. The differentiation between bronchitis and pneumonia is difficult on a clinical basis. Little evidence is available that indicates x-ray documentation of the disease state improves eventual outcome.

### **TRI-SERVICE FORMULARY DRUG LIST**

All first tier antibiotics were selected/added based on their clinical effectiveness and minimal cost impact on the decision to treat. The analgesics, decongestants, and antihistamine/decongestant combination products were selected based on usefulness in reducing symptomatology and clinical effectiveness. Decongestants and antihistamine/decongestant combination products selected are those currently on the Tri-Service Formulary. No additional agents in these categories were selected.

Amoxicillin suspension and capsules
Doxycycline 100 mg capsules or tablets
Erythromycin suspension and tablets or capsules
Erythromycin/sulfisoxazole suspension
Penicillin VK suspension and 250 mg tablets
Trimethoprim/sulfamethoxazole suspension and tablets
Acetaminophen drops, elixir, and 325 mg tablets
Brompheniramine/phenylpropanolamine elixir and extended release tablets
Ibuprofen suspension and 400 mg tablets
Pseudoephedrine 30 mg tablets
Triprolidine/pseudoephedrine tablets

### SUMMARY

The major cost with outpatient acute respiratory tract infections is the provider visit. Self treatment with over-the-counter medications, use of self-help books, access to telephone consultations, and appropriate immunizations will minimize provider visits for these minor illnesses.

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## DRUG USAGE EVALUATION MONITORING FORM

DISEASE STATE \_\_\_\_\_ DRUG \_\_\_\_\_ SURVEY PERIOD FROM \_\_\_\_\_ TO \_\_\_\_\_  
 COLLECTED BY \_\_\_\_\_ DATE OF COLLECTION \_\_\_\_\_  
 ATTENDING PHYSICIAN \_\_\_\_\_ SERVICE \_\_\_\_\_  
 PATIENT NAME \_\_\_\_\_ SSN \_\_\_\_\_ AGE \_\_\_\_\_ SEX \_\_\_\_\_  
 WEIGHT \_\_\_\_\_  
 ALLERGIES \_\_\_\_\_

ELEMENT	STD*	MET STD	COMMENT
1. Patient improvement as evidenced by: a. Clinical improvement or cure using 1st tier antibiotics. b. The absence of problematic adverse effects.	90%	Y/N	Medical record reflects adverse events reported through MTF ADR reporting system.
2. All 1st tier antibiotics used prior to 2nd or 3rd tier antibiotics.	90%	Y/N	
3. Less than optimal outcome (select category if present): a. Inappropriate drug regimen. b. Non-compliant behavior by patient. c. Patient allergy/idiosyncratic reaction. d. Complication unrelated to drug therapy. e. Inappropriate monitoring of pharmacotherapy (i.e., drug-drug or drug-food interactions.	5%	Y/N	

\* Standard to be adjusted by MTF Pharmacy & Therapeutics / Drug Utilization Evaluation Committee.

**MTF Quick Reference Guide**  
**Tri-Service Formulary Revision Three - December 1994**

<p><b>Antimicrobials / Antifungals</b>  *amoxicillin oral suspension and caps  *Bactrim™/Septra® susp and tabs  *dicloxacillin oral  *doxycycline 100 mg caps  *erythromycin oral suspension and tabs or caps  *erythromycin/sulfisoxazole susp  *griseofulvin 125 mg tabs  *isoniazid 300 mg tabs  *metronidazole 250 mg tabs  *nystatin oral suspension  *penicillin VK susp and 250 mg tabs  *rifampin 300 mg caps  *tetracycline 250 mg caps</p> <p><b>Antibiotics-EENT</b>  *Cortisporin® Otic Suspension  *gentamicin ophth. soln. 0.3%  *Neosporin® Ophth. Solution  *sulfacetamide ophth. oint. 10%</p> <p><b>Antivirals</b>  acyclovir 200 mg caps</p> <p><b>Anthelmintics</b>  mebendazole 100 mg chew tabs</p> <p><b>Antiulcer Drugs</b>  *amoxicillin oral  *bismuth subsalicylate 262 mg tabs  *metronidazole 250 mg tabs  *tetracycline 250 mg caps</p> <p><b>GERD Agents</b>  cisapride 20 mg tabs  omeprazole 20 mg caps</p> <p><b>Other GI Agents</b>  *dicyclomine tabs or caps  *Donnatal® tabs  *sulfasalazine 500 mg tabs</p> <p><b>Anti-diarrheals</b>  *loperamide 2 mg tabs or caps</p> <p><b>Genitourinary Agents</b>  *oxybutynin 5 mg tabs  *phenazopyridine 100 mg tabs</p> <p><b>Gout Agents</b>  *allopurinol tabs  *probenecid 500 mg tabs</p> <p><b>Muscle Relaxants</b>  *diazepam 5 mg tabs  *methocarbamol 500 mg tabs</p> <p><b>Asthma Agents</b>  *albuterol oral inhaler  *beclomethasone oral inhaler  *terbutaline 5 mg tabs</p>	<p><b>Antihistamines / Decongestants</b>  *Actifed® tabs  *chlorpheniramine 4 mg tabs  *chlorpheniramine syrup  *Dimetapp® Elixir  *Dimetapp® Extentabs  *diphenhydramine caps  *diphenhydramine syrup  *hydroxyzine syrup  *hydroxyzine tabs  *oxymetazoline nasal spray  *pseudoephedrine 30 mg tabs</p> <p><b>Nasal Corticosteroids</b>  *beclomethasone nasal inhaler</p> <p><b>Oral Corticosteroids</b>  *prednisone 5 mg tabs  *prednisone 20 mg tabs</p> <p><b>Anticonvulsants</b>  Dilantin® Infatabs 50 mg  Dilantin® Kapseals 100 mg  *phenobarbital elixir 20 mg/5 mL  *phenobarbital 30 mg tabs  *primidone 250 mg tabs  †Tegretol® 200 mg tabs</p> <p><b>Anticoagulants</b>  *warfarin 5 mg tabs</p> <p><b>Diuretics</b>  *furosemide 40 mg tabs  *hydrochlorothiazide tabs  *Maxzide® tabs  *spironolactone 25 mg tabs</p> <p><b>Vasodilators</b>  *isosorbide dinitrate 10 mg tabs  nitroglycerin sublingual tabs</p> <p><b>Lipid Lowering Agents</b>  *niacin tabs</p> <p><b>Electrolyte Replacement</b>  *potassium chloride slow release tabs or caps</p> <p><b>Hypotensive / Cardiac Drugs</b>  *atenolol tabs  *clonidine tabs  †Lanoxin® 0.25 mg tabs  lisinopril tabs  *propranolol 10 &amp; 40 mg tabs  *quinidine gluconate 324 mg tabs  *quinidine sulfate tabs  terazosin tabs  *verapamil long-acting tabs</p> <p><b>Diabetic Agents</b>  *human insulin, regular &amp; NPH</p>	<p><b>NSAIDs / Analgesics</b>  *acetaminophen drops, elixir, and 325 mg tabs  *aspirin, enteric-coated 325 mg tabs  *ibuprofen susp and 400 mg tabs  *indomethacin 25 mg caps  *Tylenol #3® tabs</p> <p><b>Migraine Agents</b>  *Cafergot® tabs  *Fiorinal® tabs  *Midrin® caps</p> <p><b>Antidepressants</b>  fluoxetine 20 mg caps</p> <p><b>Attention Deficit / Narcolepsy Agents</b>  *methylphenidate 10 mg tabs  *methylphenidate sustained release 20 mg tabs</p> <p><b>Contraceptives</b>  LoOvral®  *Norinyl 1+50®, Ortho-Novum 1/50®  *Ortho-Novum 1/35®, Norinyl 1+35®  Ortho-Novum 7/7/7®  Ovral®  Triphasil®/Tri-Levlen®</p> <p><b>Estrogens / Progestins</b>  conjugated estrogens 0.625 mg tabs  conjugated estrogen vaginal cream  *medroxyprogesterone 10 mg tabs</p> <p><b>Thyroid / Antithyroid Agents</b>  *propylthiouracil 50 mg tabs  †Synthroid® 100 mcg (0.1 mg) tabs</p> <p><b>Topical Agents</b>  *bacitracin ointment  *hydrocortisone 1% cream  Sebutone® shampoo  *Selsun® shampoo</p> <p><b>Vitamins &amp; Minerals</b>  *ferrous sulfate concentrated soln. 125 mg/mL  *ferrous sulfate 325 mg tabs  *pyridoxine 50 mg tabs</p> <p><b>Miotics</b>  *pilocarpine ophth. solution</p> <p><b>Miscellaneous</b>  insect sting kit</p> <p><i>*generic products are available  †DMSB sole source item</i></p>
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**Brand names are included for example only and are not meant to imply the recommendation of a specific product except for those products designated as sole source items by the Defense Medical Standardization Board.**